



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

RB6897875-1C
Job Sheet 168859



Part No: RB6897875-1C

Job Qty: 6 ea

Part Name: Fuel Nozzle Holding Fixture



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 11/23/17

Job Tracking No:

Due Date: 12/15/17

Created By: Marie Lajeunesse

Type: Stock

Description:

Customer: Air Methods Corporation (CAMET01)

7301 South Peoria Street Englewood, CO, 80112 USA ph:(303) 792-7400

Note: RB6897875 REV.3 IPP REV:A 17.11.21 NEW ISSUE DD VERF:DP

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	6 Ea		12/14/17	0.00	0.00	Start Up Waterjet2		18/02/20
100	Waterjet	6 pcs		12/14/17	0.00	1.20	Waterjet 2 OMAX		18/02/20
110	QC	6 pcs		12/14/17	0.00	0.00	QC2 Waterjet-4		18/02/20
120	Lathe Conv	6 pcs		12/15/17	0.00	2.00	Lathe Conv-1		
130	QC	6 pcs		12/15/17	0.00	0.00	QC2 Machining-5		
140	QC	6 pcs		12/15/17	0.00	0.00	QC8 Machining-5		
150	Outsource	6 pcs		12/15/17	0.00	0.00	Outsource1		
160	Packaging	6 pcs		12/15/17	0.00	0.00	Packaging2		
170	QC	6 pcs		12/15/17	0.00	0.00	QC6		
180	Packaging	6 pcs		12/15/17	0.00	0.00	Packaging3-2		
190	QC21-SA	6 Ea		12/15/17	0.00	0.00	QC21		

Part Op 100 - 1-Cut as per Dwg Dwg Rev: 3 Prog Rev: 3 2-Deburr if necessary
Descriptions: 120 - 1-Machine as per DWG 2-Deburr
150 - 1--Issue P/O to Metcore ; P/O RC 28-32 2-Bead blast 3- Certificate of Conformity is required

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	MT- 4140 B0.500X 3.000	2	0	0	0

Part Specifications

Specifications could not be found.

Plex 11/23/17 1:49 PM Dart.lajeunesse.marie

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____ Date : _____	DISPOSITION	AGAINST DEPARTMENT/PROCESS																																																																																																
DART Aerospace Ltd. 1270 Aberdeen Street Hawkebury, ON K64 1K7 CANADA TEL.: 1 613 632-6200 Email: sales@dartaero.com www.dartaerospace.com DART AEROSPACE Container No: S043975 Part: RB6897875 - 1C Job No: 168859 Serial No/Batch: S043975 Revision: RB6897875 Inspector: _____ Date: 02/20/18		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> Master Jet Coord. aging opplier </td> <td style="width: 50%; text-align: center;"> Engineering Quality Other </td> </tr> <tr> <td colspan="2" style="text-align: center;">MRB (QSI042) Approval</td> </tr> <tr> <td colspan="2" style="text-align: center;">Completed By</td> </tr> <tr> <td colspan="2" style="text-align: center;">Lead hand / Supervisor Approval Verification</td> </tr> <tr> <td colspan="2" style="text-align: center;">QC / QA Coordinator Approval</td> </tr> </table>	Master Jet Coord. aging opplier	Engineering Quality Other	MRB (QSI042) Approval		Completed By		Lead hand / Supervisor Approval Verification		QC / QA Coordinator Approval																																																																																							
		Master Jet Coord. aging opplier	Engineering Quality Other																																																																																															
		MRB (QSI042) Approval																																																																																																
		Completed By																																																																																																
Lead hand / Supervisor Approval Verification																																																																																																		
QC / QA Coordinator Approval																																																																																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left;">Root Cause</th> </tr> <tr> <td style="width: 50%; vertical-align: top;"> <table border="0" style="width: 100%;"> <tr><td>Environment</td><td>☐</td><td>No Re-verification</td><td>☐</td></tr> <tr><td>Design</td><td>☐</td><td>Operator</td><td>☐</td></tr> <tr><td>Doc/Data</td><td>☐</td><td>Offset/Setup</td><td>☐</td></tr> <tr><td>Equip/Tooling</td><td>☐</td><td>Supplier</td><td>☐</td></tr> <tr><td>Handling/Pre</td><td>☐</td><td>Training</td><td>☐</td></tr> <tr><td>Material</td><td>☐</td><td>Use for Testing</td><td>☐</td></tr> <tr><td>Internal Transport</td><td>☐</td><td>Poor Information</td><td>☐</td></tr> <tr><td>Tribal Knowledge</td><td>☐</td><td>Rushing</td><td>☐</td></tr> <tr><td>LOA</td><td>☐</td><td>Product Improvement</td><td>☐</td></tr> <tr><td>Substation</td><td>☐</td><td>Process Improvement</td><td>☐</td></tr> <tr><td>Past Expiry Date</td><td>☐</td><td>Manufacturing Process</td><td>☐</td></tr> <tr><td>Misidentified</td><td>☐</td><td>Past Due</td><td>☐</td></tr> </table> </td> <td style="width: 50%; vertical-align: top;"> <table border="0" style="width: 100%;"> <tr><td>Pressure/Forced</td><td>☐</td><td>Temperature/Cure</td><td>☐</td></tr> <tr><td>Bending</td><td>☐</td><td>Set-up</td><td>☐</td></tr> <tr><td>Centre Not Concentric</td><td>☐</td><td>BOM/Route</td><td>☐</td></tr> <tr><td>Cracks</td><td>☐</td><td>Broken/Damage/Defect</td><td>☐</td></tr> <tr><td>Crimp/Kink/Ripple/Wave</td><td>☐</td><td>Inspection Incomplete/Unqualified</td><td>☐</td></tr> <tr><td>Cuffs</td><td>☐</td><td>Contamination</td><td>☐</td></tr> <tr><td>Crushing</td><td>☐</td><td>Countersink</td><td>☐</td></tr> <tr><td>Heat Treat</td><td>☐</td><td>Cut Too Short</td><td>☐</td></tr> <tr><td>Wave/Twist in Tube</td><td>☐</td><td>Instructions Incomplete/Unclear</td><td>☐</td></tr> <tr><td>Marks/Chatter</td><td>☐</td><td>Drill Holes</td><td>☐</td></tr> </table> </td> </tr> <tr> <td colspan="2" style="text-align: center;">OTHER : _____</td> </tr> </table>		Root Cause		<table border="0" style="width: 100%;"> <tr><td>Environment</td><td>☐</td><td>No Re-verification</td><td>☐</td></tr> <tr><td>Design</td><td>☐</td><td>Operator</td><td>☐</td></tr> <tr><td>Doc/Data</td><td>☐</td><td>Offset/Setup</td><td>☐</td></tr> <tr><td>Equip/Tooling</td><td>☐</td><td>Supplier</td><td>☐</td></tr> <tr><td>Handling/Pre</td><td>☐</td><td>Training</td><td>☐</td></tr> <tr><td>Material</td><td>☐</td><td>Use for Testing</td><td>☐</td></tr> <tr><td>Internal Transport</td><td>☐</td><td>Poor Information</td><td>☐</td></tr> <tr><td>Tribal Knowledge</td><td>☐</td><td>Rushing</td><td>☐</td></tr> <tr><td>LOA</td><td>☐</td><td>Product Improvement</td><td>☐</td></tr> <tr><td>Substation</td><td>☐</td><td>Process Improvement</td><td>☐</td></tr> <tr><td>Past Expiry Date</td><td>☐</td><td>Manufacturing Process</td><td>☐</td></tr> <tr><td>Misidentified</td><td>☐</td><td>Past Due</td><td>☐</td></tr> </table>	Environment	☐	No Re-verification	☐	Design	☐	Operator	☐	Doc/Data	☐	Offset/Setup	☐	Equip/Tooling	☐	Supplier	☐	Handling/Pre	☐	Training	☐	Material	☐	Use for Testing	☐	Internal Transport	☐	Poor Information	☐	Tribal Knowledge	☐	Rushing	☐	LOA	☐	Product Improvement	☐	Substation	☐	Process Improvement	☐	Past Expiry Date	☐	Manufacturing Process	☐	Misidentified	☐	Past Due	☐	<table border="0" style="width: 100%;"> <tr><td>Pressure/Forced</td><td>☐</td><td>Temperature/Cure</td><td>☐</td></tr> <tr><td>Bending</td><td>☐</td><td>Set-up</td><td>☐</td></tr> <tr><td>Centre Not Concentric</td><td>☐</td><td>BOM/Route</td><td>☐</td></tr> <tr><td>Cracks</td><td>☐</td><td>Broken/Damage/Defect</td><td>☐</td></tr> <tr><td>Crimp/Kink/Ripple/Wave</td><td>☐</td><td>Inspection Incomplete/Unqualified</td><td>☐</td></tr> <tr><td>Cuffs</td><td>☐</td><td>Contamination</td><td>☐</td></tr> <tr><td>Crushing</td><td>☐</td><td>Countersink</td><td>☐</td></tr> <tr><td>Heat Treat</td><td>☐</td><td>Cut Too Short</td><td>☐</td></tr> <tr><td>Wave/Twist in Tube</td><td>☐</td><td>Instructions Incomplete/Unclear</td><td>☐</td></tr> <tr><td>Marks/Chatter</td><td>☐</td><td>Drill Holes</td><td>☐</td></tr> </table>	Pressure/Forced	☐	Temperature/Cure	☐	Bending	☐	Set-up	☐	Centre Not Concentric	☐	BOM/Route	☐	Cracks	☐	Broken/Damage/Defect	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Cuffs	☐	Contamination	☐	Crushing	☐	Countersink	☐	Heat Treat	☐	Cut Too Short	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Marks/Chatter	☐	Drill Holes	☐	OTHER : _____		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Power Loss/Surge Folio/Program Grain Weld Wrong Stock Pulled Out of Sequence Off-set Mislabeled Fit/Function Misaligned/off center </td> <td style="width: 50%; vertical-align: top;"> Positioned Wrong Outside Dimensions Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved Drawing Finish Misread Turning Sequence </td> </tr> </table>	Power Loss/Surge Folio/Program Grain Weld Wrong Stock Pulled Out of Sequence Off-set Mislabeled Fit/Function Misaligned/off center	Positioned Wrong Outside Dimensions Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved Drawing Finish Misread Turning Sequence
Root Cause																																																																																																		
<table border="0" style="width: 100%;"> <tr><td>Environment</td><td>☐</td><td>No Re-verification</td><td>☐</td></tr> <tr><td>Design</td><td>☐</td><td>Operator</td><td>☐</td></tr> <tr><td>Doc/Data</td><td>☐</td><td>Offset/Setup</td><td>☐</td></tr> <tr><td>Equip/Tooling</td><td>☐</td><td>Supplier</td><td>☐</td></tr> <tr><td>Handling/Pre</td><td>☐</td><td>Training</td><td>☐</td></tr> <tr><td>Material</td><td>☐</td><td>Use for Testing</td><td>☐</td></tr> <tr><td>Internal Transport</td><td>☐</td><td>Poor Information</td><td>☐</td></tr> <tr><td>Tribal Knowledge</td><td>☐</td><td>Rushing</td><td>☐</td></tr> <tr><td>LOA</td><td>☐</td><td>Product Improvement</td><td>☐</td></tr> <tr><td>Substation</td><td>☐</td><td>Process Improvement</td><td>☐</td></tr> <tr><td>Past Expiry Date</td><td>☐</td><td>Manufacturing Process</td><td>☐</td></tr> <tr><td>Misidentified</td><td>☐</td><td>Past Due</td><td>☐</td></tr> </table>	Environment	☐	No Re-verification	☐	Design	☐	Operator	☐	Doc/Data	☐	Offset/Setup	☐	Equip/Tooling	☐	Supplier	☐	Handling/Pre	☐	Training	☐	Material	☐	Use for Testing	☐	Internal Transport	☐	Poor Information	☐	Tribal Knowledge	☐	Rushing	☐	LOA	☐	Product Improvement	☐	Substation	☐	Process Improvement	☐	Past Expiry Date	☐	Manufacturing Process	☐	Misidentified	☐	Past Due	☐	<table border="0" style="width: 100%;"> <tr><td>Pressure/Forced</td><td>☐</td><td>Temperature/Cure</td><td>☐</td></tr> <tr><td>Bending</td><td>☐</td><td>Set-up</td><td>☐</td></tr> <tr><td>Centre Not Concentric</td><td>☐</td><td>BOM/Route</td><td>☐</td></tr> <tr><td>Cracks</td><td>☐</td><td>Broken/Damage/Defect</td><td>☐</td></tr> <tr><td>Crimp/Kink/Ripple/Wave</td><td>☐</td><td>Inspection Incomplete/Unqualified</td><td>☐</td></tr> <tr><td>Cuffs</td><td>☐</td><td>Contamination</td><td>☐</td></tr> <tr><td>Crushing</td><td>☐</td><td>Countersink</td><td>☐</td></tr> <tr><td>Heat Treat</td><td>☐</td><td>Cut Too Short</td><td>☐</td></tr> <tr><td>Wave/Twist in Tube</td><td>☐</td><td>Instructions Incomplete/Unclear</td><td>☐</td></tr> <tr><td>Marks/Chatter</td><td>☐</td><td>Drill Holes</td><td>☐</td></tr> </table>	Pressure/Forced	☐	Temperature/Cure	☐	Bending	☐	Set-up	☐	Centre Not Concentric	☐	BOM/Route	☐	Cracks	☐	Broken/Damage/Defect	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Cuffs	☐	Contamination	☐	Crushing	☐	Countersink	☐	Heat Treat	☐	Cut Too Short	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Marks/Chatter	☐	Drill Holes	☐									
Environment	☐	No Re-verification	☐																																																																																															
Design	☐	Operator	☐																																																																																															
Doc/Data	☐	Offset/Setup	☐																																																																																															
Equip/Tooling	☐	Supplier	☐																																																																																															
Handling/Pre	☐	Training	☐																																																																																															
Material	☐	Use for Testing	☐																																																																																															
Internal Transport	☐	Poor Information	☐																																																																																															
Tribal Knowledge	☐	Rushing	☐																																																																																															
LOA	☐	Product Improvement	☐																																																																																															
Substation	☐	Process Improvement	☐																																																																																															
Past Expiry Date	☐	Manufacturing Process	☐																																																																																															
Misidentified	☐	Past Due	☐																																																																																															
Pressure/Forced	☐	Temperature/Cure	☐																																																																																															
Bending	☐	Set-up	☐																																																																																															
Centre Not Concentric	☐	BOM/Route	☐																																																																																															
Cracks	☐	Broken/Damage/Defect	☐																																																																																															
Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐																																																																																															
Cuffs	☐	Contamination	☐																																																																																															
Crushing	☐	Countersink	☐																																																																																															
Heat Treat	☐	Cut Too Short	☐																																																																																															
Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐																																																																																															
Marks/Chatter	☐	Drill Holes	☐																																																																																															
OTHER : _____																																																																																																		
Power Loss/Surge Folio/Program Grain Weld Wrong Stock Pulled Out of Sequence Off-set Mislabeled Fit/Function Misaligned/off center	Positioned Wrong Outside Dimensions Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved Drawing Finish Misread Turning Sequence																																																																																																	

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

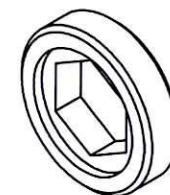
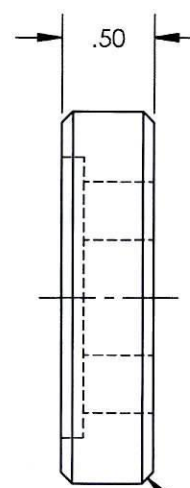
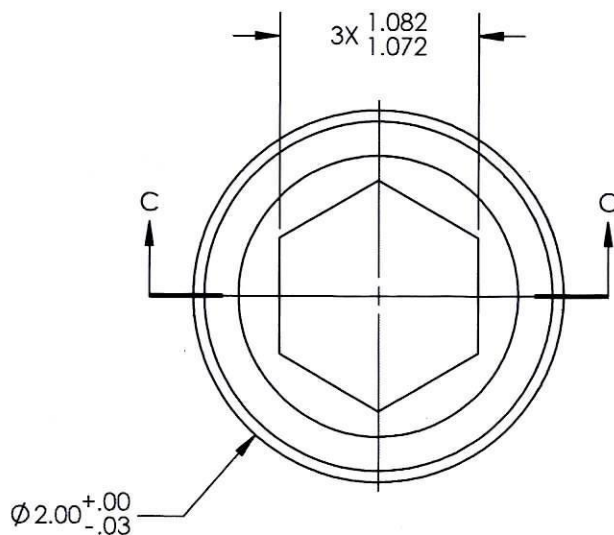
QA Closed: _____ Date: _____

Work Order update only ☐

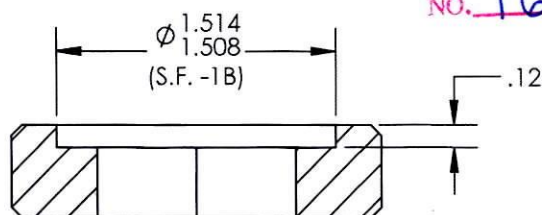
Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
OTHER : _____									

This drawing, specifications, and concepts contained here in are the sole property of Dart Aerospace, and may not be reproduced or used in any fashion without the prior written permission of Dart Aerospace Eugene, OR.

REVISIONS					
REV	ECR	DESCRIPTION	DATE	INITIAL	APPROVED
1		-1C CH'D MATERIAL WAS 01 IS 4140.	8/5/2013	RJC	RW
2	16-0176	-1C CH'D DIM WAS (2.00) IS 2.00, WAS Ø1.500 ∇ .120 IS Ø1.514/-1.508 ∇ .12, WAS 1.082/-1.072 HEX IS 3X 1.082/-1.072, CH'D MATERIAL WAS 4140 IS 4140/4142, CH'D HEAT TREAT WAS RC 50-54 IS RC 28-32.	10/20/2016	RJC	SM
3	17-0100	-1C CH'D DIM WAS Ø2.00 IS Ø2.00+0.00-.03.	4/24/2017	DPD	JAG



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 168859 MJ
17-11-23



SECTION C-C

(1C)

TOP

DART AEROSPACE	
TITLE FIXTURE-HOLDING FUEL NOZZLE	
DWG NO. RB6897875-1C	REV 3
MATL 4140/4142	UNLESS OTHERWISE SPECIFIED
HEAT TREAT RC 28-32	DIMENSIONS ARE IN INCHES
FINISH SEE -1 WELDMENT	.XXX $\pm$.005 FRACTIONS $\pm$ 1/8
SPEC	.XX $\pm$.01 ANGLES $\pm$ 5°
DRAWN BY: CLOUGH	.X $\pm$.1 SURFACES = 125/
CHECKED: DUERFELDT	1. BREAK ALL SHARP EDGES
OPPS APPR: ANDERSON	.015 x 45° OR .015R
QA APPR: LINDSAY	2. DIMENSIONAL LIMITS APPLY
APPROVED: MACKOVJAK	AFTER PLATING
SCALE 1:1	3. INTERPRET DIM AND TOL PER ASME Y14.5M-2009
DATE 9/16/2009	USED ON MODEL
SHEET 5 OF 7	ROLLS ROYCE

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation			Disposition		
Area for Description of Work Order Deviation and Disposition.			Completed By		
			Lead hand / Supervisor Approval Verification		
			QC / QA Coordinator Approval		
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					